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ABSTRACT

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SEX-ROLE SOCIALIZATION AND EMPLOYMENT REALITIES: IMPLICATIONS FOR VOCATIONAL INTEREST MEASURES

Dale J. Prediger
Nancy S. Cole[1]

The existence of sex-role stereotypes in the vocational preferences of students is widely recognized. Its extent was vividly demonstrated in a recent nationwide study (Prediger, Roth, & Noeth, 1973) which found that the vocational preferences of more than half of the nation's 11th grade girls fell in 3 of 25 job families (education and social services, nursing and human care, and clerical/secretarial work)—job families preferred by only 7% of the nation's 11th grade boys. By contrast, the vocational preferences of boys greatly outnumbered those of girls in the technologies/trades, engineering, natural science, and business management job families. Using U.S. census data, Gottfredson, Holland, and Gottfredson (1974) recently demonstrated the extent to which sex-role stereotypes are also reflected in employment patterns.

These data present a challenge to the guidance profession, particularly because the social, economic, and political barriers to nontraditional careers are being eliminated, one by one, as a result of both increased public concern about sex discrimination and the impact of federal legislation (e.g., Title IX of the Education Amendments of 1972) and regulations (Equal Employment Opportunity Commission, 1970). Progress is being made on many fronts. Federal agencies such as the National Science Foundation and the National Institute of Education are devoting large sums of money to studies of barriers to nontraditional careers and the ways these barriers can be overcome. Publishers are producing textbooks that show men and women in nontraditional work roles. The U.S. Department of Labor has begun to use sex-neutral titles for occupations. Employers are initiating affirmative action employment programs. The American Personnel and Guidance Association is conducting a series of more than 200 state workshops to help counselors become aware of and, it is hoped, eliminate sex-biased career guidance practices ("Sex Equality Trainers," 1974). In conjunction with these activities, there is also a steady increase in the number of men and women entering areas of the labor force until now considered nontraditional.

Although it is not the purpose of this paper to review the many efforts, nationwide, to help students consider and enter nontraditional careers, the characteristics and use of vocational interest inventories must be viewed in the context of these efforts. Indeed, interest inventories have recently become the subject of considerable attention because of the key role they can play in career exploration and planning. Definitions of sex bias in interest inventories have been formulated by the AMEG Commission on Sex Bias in Measurement (1973) and the National Institute of Education (Diamond, in press). Both organizations are seeking ways to make practitioners and publishers aware of the recently developed guidelines for assessing sex bias (Diamond, in press).

Implicit in all these activities is the desire to insure that measures of vocational interests do not simply reflect sex-role stereotypes resulting from past socialization. Instead, the hope is that interest inventories can be used to help men and women consider the expanded career opportunities now beginning to open to them. The purposes of this paper are (a) to examine methods for reporting vocational interests which do and do not reflect differences in the socialization of females and males, and (b) to explore the problems and issues involved in using current employment distributions as criteria for validating and evaluating interest inventory results.

[1]The authors are grateful to Dr. Leo Munday, Vice President of the Research and Development Division of ACT, and Dr. Gary Hanson, Assistant Director of the Developmental Research Department, for their helpful comments on an early draft of this paper.

Deriving Meaning from Interest Inventory Responses

Although few people question the influence of past experiences on vocational interests, few people want measures of vocational interests simply to reflect the effects of sex-role socialization. Instead, the basic goal of interest measurement is to identify the types of work in which a person is likely to experience satisfaction. Unfortunately, in a time of increasing career options for both sexes, there is little clear information about how to predict the future satisfaction of women or men in career areas new to them. Cole and Hanson (in press) argue that in the absence of appropriate information one must accept one of the two hypotheses concerning the relationship of interests to occupational satisfaction defined below.

1. *Socialization dominance hypothesis:* Until the socially accepted activity and choice options of males and females are broadened during the developmental years, the occupations in which males and females will be satisfied will be restricted to those consistent with their early sex-role socialization.

2. *Opportunity dominance hypothesis:* When socially accepted activity and choice options broaden and nontraditional career opportunities increase, people will find satisfaction in a wider range of occupations, in spite of any limitations imposed by their earlier socialization.

Current approaches to the measurement of vocational interests are consonant with one of the two hypotheses, particularly in the choice of a reference group on which to base score interpretations. There is no question that sex-role socialization differentially influences the activity and occupational preferences of men and women and hence their responses to many interest inventory items. The problem lies in how to use these responses in reports to counselees.

One approach, an approach based on the socialization dominance hypothesis, is simply to report raw scores. The reasoning is that if a person prefers certain types of activities and not others, for whatever reason—sex-role socialization, past experience, or lack of experience—raw scores will appropriately reflect this as well as the likelihood that the person will find satisfaction in corresponding occupations. Stated another way, the interest inventory responses of men and women (considered as groups) differ. According to the socialization hypothesis, these responses reflect personal orientations that are not likely to change; hence, the responses indicate potential satisfaction in different types of occupations. When this application of the socialization dominance hypothesis is followed, as in Holland's use of raw scores in the Self-Directed Search (SDS), many more men than women are referred to scientific and technical occupations and many more women than men are referred to social service and artistic occupations (Holland, 1972). Holland (1974b) views these differential results for men and women as a natural outcome of interest assessment since "interest inventories simply tally the effects of one's life history and heredity" (p. 215). Apart from the question of whether the socialization dominance hypothesis warrants support, it would appear that there are several serious psychometric problems involved in the use of raw scores to represent human interests.

Quite early in the development of psychological assessment, psychologists recognized that raw scores have no meaning in and of themselves—that a zero score on an interest inventory (or aptitude test) does not mean zero interest (or ability). It was only by determining the standing of a person's characteristics in a relevant norm group that psychologists were able to assess the relative strength of the characteristics in human terms. (Recent efforts to implement criterion-referenced interpretation as a substitute for norm-referenced interpretation have been confined largely to domains of educational achievement amenable to thorough specification, e.g., mathematics.) Closely associated with the above principle was the recognition that a test (or inventory) is, at best, a sample of behavior and that although they appear to be numerically precise, test scores may not correspond closely to quantities of whatever it is that is being measured. That is, a raw score of 6 on an interest scale does not necessarily indicate twice the interest indicated by a raw score of 3, nor does a raw score of 6 on one scale necessarily indicate more interest than a raw score of 5 on another scale, even assuming perfectly reliable scales. Thus, comparisons of interest level from scale to scale are not warranted when raw scores are used. Indeed, the average raw scores of women and men on a set of interest scales are determined largely by the inventory author's choice of items for the scales, as

recently demonstrated by Rayman (1974). The raw score means of men and women on each of Rayman's Holland-type scales are much more similar than raw score means on Holland's SDS (Holland, 1972).

If one agrees that norms are necessary, the next question that arises is "what norms?" Our reading of the literature indicates that the choice of a norm group is a compromise—a compromise that weighs theory, practicality, and the need for specificity. Past practice, as represented in the Strong Vocational Interest Blank (Campbell, 1971), the Kuder General Interest Survey (Kuder, 1964), and the Ohio Vocational Interest Survey (D'Costa, Winefordner, Odgers, & Koons, 1970), suggests that in the assessment of human interests, same-sex norms represent the minimally desirable standard from all three standpoints. Although the new Strong-Campbell Interest Inventory (Campbell, 1974) uses combined-sex norms to obtain standard scores on the basic and theme scales, same-sex norms are also used in reporting results for these scales. Thus, past practice in interest assessment has been to use norms in reporting results, typically same-sex norms.

The use of same-sex norms in reporting interest inventory results conforms to the opportunity dominance hypothesis described above and produces comparable interest score distributions for women and men throughout the full range of career areas. Recent research on the structure of men's and women's interests (Cole, 1973; Cole & Hanson, 1971) and research on the interest scores of men and women in the same occupation (Roth, Hanson, & Cole, 1973) and college majors (Hanson, 1974) support the same-sex norm tradition. A particularly useful finding is that for some inventories men and women in the same occupations or college majors (both traditional and nontraditional) receive similar interest score profiles when same-sex norms are used. Raw score profiles are typically more divergent.

The use of same-sex norms, in effect, treats the results of sex-role socialization as the appropriate baseline against which to compare the interests of an individual. Thus, a woman whose mechanical interests are high relative to those of other women is reported to have high mechanical interests since her interests are exceptional, given the social norms for female behavior in our society. This approach to reporting interest results recognizes that the social climates for mechanical interests among females and males are possibly as different as the January climates of Minnesota and Mississippi, and that it may be as inappropriate to compare the raw scores of females and males on a mechanical interest scale as it would be to compare the raw scores of residents in the two states on a scale assessing "interest in snow." Of course, the scores (numbers) *could* be compared, but the psychological meaning of score differences would be in doubt. The use of combined-sex interest norms, a procedure analogous to the use of combined-state norms in the example above, would appear to be equally inappropriate. We propose that the scores reported for interest inventories should, as a minimum requirement, take into account the different social/environmental climates that males and females experience in American society. Same-sex norms, which compare the responses of women to those of other women and the responses of men to those of other men, have been the traditional approach to accomplishing this goal.

Employment Patterns as Criteria for Interest Patterns

The consequences of following the socialization dominance hypothesis in the assessment of vocational interests are vividly illustrated in the recent article by Gottfredson et al. (1974) referred to above. In this article, Holland and his co-workers suggest that the interest score distributions of men and women should correspond to the occupational distributions of men and women. That is, the proportion of women (or men) scoring highest on each scale in a set of interest scales should be similar to the proportion of women (or men) in occupations corresponding to those scales. Census data are used to show the percentage of women and men employed in occupations categorized according to Holland's six types. The distribution by Holland type for women (men in parentheses) in occupations requiring "some college and above" is given as follows—Social: 70% (20%); Enterprising: 15% (42%); Conventional: 4% (6%); Realistic: 1% (6%); Investigative: 5% (21%); and Artistic: 5% (6%). (It should be noted that because they are based on the entire adult labor force, these data do not neces-

sarily represent the employment opportunities of women and men entering the labor force in the last few years.)

Holland and his co-workers use the interests of several samples of high school and college youth, as assessed by Holland's SDS and the ACT Interest Inventory (Hanson, 1974), to classify students into the above six categories according to their highest interest score. The distributions of men's and women's interests reported as raw scores are shown to correspond more closely to the occupational distributions than do interest distributions derived from normed scores. On the basis of these results, interest inventories using same-sex norms are said to be "unrealistic because they create score distributions that diverge greatly from the distribution of actual employment" (p. iii). In addition, the correspondence between raw score and occupational distributions is cited as suggesting that "the infrequent occurrence of some . . . [interest codes] is not an anomaly of assessment but corresponds to the uneven distribution of kinds of work in society" (p. 8).

This interpretation and application of the socialization dominance hypothesis, an extension of Holland's previous assertion that interest inventories simply tally the effects of one's life history and heredity, raises several important issues. If occupational distributions are to be used in judging the adequacy of interest score distributions, it would follow that a society's occupational structure should, ideally, determine the distributions of interest scores—a proposal of far-reaching import for interest inventory authors and users. Or, stated another way, the guidance provided by interest inventory scores at a given time should reflect the employment distributions of men and women at that time. By this standard, interest inventories of the 1850s would have suggested farming to nearly all males and homemaking to nearly all females.

Conversely, this application of the socialization dominance hypothesis supposes that the distribution of human interests conforms, theoretically, to the occupational structure of society, in this instance, to the industrial/technological society of the United States. We know of no theory (psychological or psychometric) or research to support this supposition.

Occupational Group Membership as a Validation Criterion

Occupational group membership, as represented by the employment distributions of men and women, has sometimes been used as a criterion in studies of the predictive validity of interest inventories. More often, occupational preference (choice) has served as the criterion. In this approach to validation, predictive validity is indicated by the accuracy of predictions of occupational preference or entry (e.g., see Gottfredson & Holland, 1975). Length of time in an occupation is sometimes used in refining the definition of membership.

As explained below, interest inventories providing scores which reflect sex-role stereotypes and expectations will generally produce more accurate predictions of occupational preference and membership than inventories which do not. However, the former inventories may be "successful" only because they replicate the occupational status quo resulting from sex-role expectations.

It is no great feat to accurately identify large numbers of women who will later enter certain occupations, for example, social service occupations. According to the 1970 census data tabulated by Gottfredson et al. (1974), 70% of the employed women in the United States who have "some college or above" are in social service occupations. Hence, if one simply used the occupational base rates to predict, 30 or 40 years ago, that *all* girls who went to college and later became employed would be in social service occupations, 1970 census data would prove the predictions to be correct for 70% of the cases (i.e., the "hit rate" would be 70%).

If occupational entry (or preference) is accepted as an appropriate criterion in interest inventory validation, then in order for an interest inventory to demonstrate respectable validity, it would have to improve upon the "hit rate" achieved through the use of occupational base rates illustrated in the example above. An interest inventory that does not suggest social service, or nursing, or clerical occupations to large numbers of women, and business, or technical, or trades occupations to large numbers of men would produce a relatively low hit rate because of the very nature of current occupational distributions. Its predictive validity (or

hit rate) should be suspect. On the other hand, the hit rate could be relatively high for an interest inventory providing predictions that closely parallel current employment distributions. However, base rates can be hard to beat, as Gottfredson and Holland (1975) recently demonstrated in an attempt to predict the occupational preferences of college women attending two different types of institutions (*N*s = 432 and 557). Base rate predictions (hit rates = 72% and 62%) were more accurate than predictions obtained from Holland's SDS, even though the SDS predictions reflected essentially the same sex-role stereotypes as the occupational preferences.

Because occupational group membership (or preference) predictions must reflect employment (or preference) distributions in order to achieve high hit rates, the hit rates obtained by this use of group membership as a criterion variable in predictive validity studies would appear to have questionable bearing on interest inventory validity. The assumption in such predictive studies is that people enter and persist in occupations because they are satisfied with them. However, there are multiple causes of occupational entry and persistence, only some of which are directly relevant to satisfaction. Thus, when group membership is used as a validation criterion, it is important to distinguish between factors influencing satisfaction with work (the commonly accepted criterion for interest measures) and factors influencing occupational entry and persistence (e.g., the expectations of society, labor market needs, the contingencies of life).

To those who maintain that the primary goal of psychological science is to predict human behavior, we can only suggest that a prior goal is to determine which behavior it is appropriate to predict. Given the counseling context in which interest inventories are used, it would appear that potential satisfaction with the activities required in a job is a more appropriate criterion than occupational entry. The latter criterion might be preferable in research on the psychosocial determinants of job-seeking behavior, for example.

Thus, we propose that in validating interest inventories for use in vocational counseling, the goal should not be to predict what people will do (or prefer). As already noted, pursuit of this goal will force one into a numbers game in which the winning strategy will be to produce interest score distributions which correspond with the preference and employment base rates for men and women. Because these base rates in part result from sex-role socialization and expectations, this strategy uses what could be called the *socialization approach to validation.*

We propose an alternative strategy for validation, one which avoids some of the problems inherent in the socialization approach by distinguishing between those factors influencing occupational entry and those influencing satisfaction. This strategy requires one to characterize accurately and separately the interests of those women and men who have and will become engineers, nurses, chemists, etc.—regardless of the base rates. Validity is determined by the degree to which the interests of satisfied members of occupations actually match the characterizations used in counseling. Because current occupational base rates are ignored and all occupations are considered to be equally likely options, depending on the person's vocational interests, goals, and other characteristics, the arbitrary channeling of counselees into high base rate occupations is avoided. The validation strategy we are proposing recognizes that many persons may not actually enter occupations corresponding to the options suggested by an interest inventory. For a number of very practical reasons, people will continue to find their way into high base rate occupations. The proposed strategy places emphasis on "should consider," not "will enter" (or prefer), and can be called an *opportunity approach to validation.*

The opportunity approach to validation does allow for the use of occupational group membership predictions as an indicator of validity. However, in the assessment of hit rates, the occupational groups should be of equal size and, whenever possible, employment stability and intrinsic satisfaction should be used as criteria in selecting group members. Since all groups are of equal size, hit rates will not be affected by occupational base rates reflecting sex-role expectations or employer needs at a particular time.

Both approaches to interest inventory validation require one to identify the vocational interests characterizing people in given occupations. However, there is a crucial difference in the way in which persons pursuing nontraditional careers are treated. The predictive efficiency of the socialization approach to validation will be little affected if the interest patterns of the comparatively few (by definition) persons in nontraditional occupations are ignored. Given the employment status quo and sex-role expectations, persons with such interests are not likely to enter nontraditional occupations—and occupational entry is the criterion to be predicted in the socialization

approach. On the other hand, the opportunity approach to validation requires identification of characteristics associated with occupational satisfaction (membership being an intermediate criterion), regardless of the base rates. When differences are found in the interests of men and women in any occupation (traditional or nontraditional), this information must be reflected in the occupational suggestions provided by the interest inventory.

Application of the opportunity approach to validation to two popular interest inventories will illustrate its implications for validity evidence. For example, the opportunity approach would require evidence justifying the use of the same Holland raw score code on the SDS to characterize members of an occupation, regardless of sex (Holland, 1974a). Because of the substantial differences in the SDS raw score profiles of men and women (i.e., men score high on the Investigative and Realistic Scales and women score high on the Social and Artistic Scales), it is possible that the Holland raw score codes for traditionally male occupations may not accurately reflect the vocational interests of women in those occupations (Prediger & Hanson, 1974). If this is true, women counselees with interests that are similar to the interests of women in traditionally male occupations might, instead, be referred to traditional female occupations, thus perpetuating the employment status quo. Holland (1974b) has acknowledged the need for research comparing the interests of men and women in the same occupation.

Likewise, the opportunity approach would require evidence justifying the use of men's scales with women (and vice versa) on the new Strong-Campbell Interest Inventory (Campbell, 1974). That is, the appropriateness of comparing the interests of women with those of men in an occupation consisting predominantly of men would have to be shown. Again, the basic question is whether women in an occupation really score as men do (and vice versa). If not, different score standards and interpretations are required when interests are reported on opposite-sex as opposed to same-sex scales.

The difference between the socialization and opportunity approaches to the use of occupational group membership as a criterion for interest inventory validation is crucial. The former can result in reinforcement of the status quo, as represented by current occupational preferences and employment distributions of men and women. The latter can facilitate the exploration of career opportunities that are only just developing.

Trade-Offs in Interest Measurement

Two conflicting approaches to reporting vocational interest inventory results have been discussed. The approach based on the socialization dominance hypothesis provides quite different distributions of career options to men and women, distributions corresponding to current occupational sex-role stereotypes. Validation of this approach relies heavily on the use of occupational entry as the criterion for prediction. Hence, it is closely tied to current employment base rates. By contrast, reporting and validation procedures based on the opportunity dominance hypothesis result in similar distributions of career options for men and women, and thus encourage the exploration of nontraditional careers.

A possible negative effect of the opportunity dominance approach is the possibility of suggesting that a counselee explore a career area that will be rejected as inappropriate because of internalized sex-role stereotypes or lack of employment opportunities. Holland and his co-workers (Gottfredson et al., 1974) argue that when interest score distributions and employment distributions are highly discrepant, "large numbers of people are misleadingly told their interests resemble those appropriate for jobs that they usually do not get" (p. 11). This is stated in support of their previous assertion that the "use of sex norms may be misleading in vocational guidance, especially for women" (p. 11). But is it not possible that women's interests *could* be appropriate to jobs they usually do not get? Could sex-biased employment practices and stereotypes about what is "woman's work" affect the types of jobs which women obtain? In the case of women and blacks, would it be misleading for an interest inventory to suggest exploration of apprenticeship trades, even if both sex and race discrimination were widely practiced?

We believe that it makes no practical sense to confound a report of measured interests with information on the occupation structure and that, indeed, troublesome counseling problems will result. In career counseling, both measures of interests *and* information about the labor market should be considered—and separately weighed.

The opportunity dominance hypothesis provides an alternative approach to helping counselees take into account the realities of the work world. We believe the primary purpose of interest inventories is to help counselees organize their preferences for work-related activities into basic areas of interest that suggest (through the opportunity approach to validity) occupations, college majors, etc., for exploration. This exploration should not be restricted to traditional careers through use of inventories based on the socialization dominance hypothesis. We believe that during the process of exploration, the individual should be helped to take into account and weigh the realities of the social and economic structure (employment trends, opportunities, etc.), particularly in his or her own locale. In this approach, information about interests and information about the work world are considered separately by the counselee.

The problems of providing appropriate career guidance when wide discrepancies exist between interest distributions and occupational distributions should not be minimized. Too often occupational "reality" has restricted unnecessarily the options for certain groups, whether or not interest inventories are involved. For example, when a counselor dwells on the difficulties a woman may encounter in an engineering career because few women are now in engineering, the "reality" may become an unrealistic barrier. At the same time, it would seem to us foolish for a woman with high technical interests to consider a career in engineering without also considering the barriers to women's employment which do exist in technical fields. Providing realistic occupational information yet not letting it become a psychological block is a delicate matter indeed, certainly not one that can be handled well by interest scores.

Although there are trade-offs one must make in choosing any approach to interest measurement, the most desirable course for the future seems clear to us. The price to be paid in the opportunity dominance approach—the suggestion of career areas which may be rejected as inappropriate because of internalized sex-role stereotypes or lack of opportunities—seems small indeed in comparison with the potential cost of adhering to the socialization dominance hypothesis—that is, frequent failure to identify otherwise suitable career options that do not conform to current sex-role stereotypes or employment distributions.

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